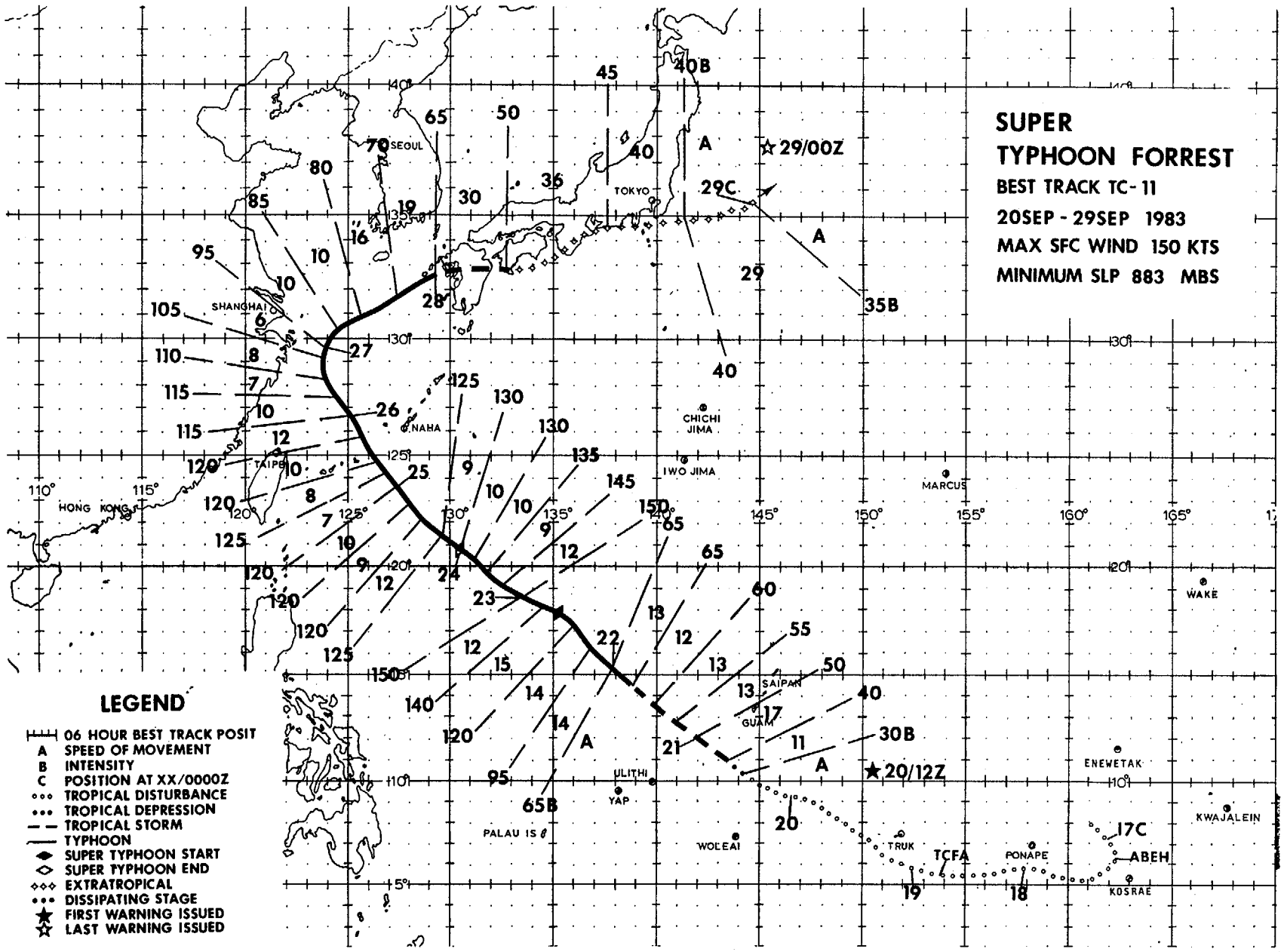
SUPER
TYPHOON FORREST
BEST TRACK TC-11
20SEP - 29SEP 1983
MAX SFC WIND 150 KTS
MINIMUM SLP 883 MBS
LEGEND
06 HOUR BEST TRACK POSIT
A SPEED OF MOVEMENT
B INTENSITY
C POSITION AT XX/0000Z
TROPICAL DISTURBANCE
TROPICAL DEPRESSION
TROPICAL STORM
TYPHOON
SUPER TYPHOON START
SUPER TYPHOON END
EXTRATROPICAL
DISSIPATING STAGE
FIRST WARNING ISSUED
LAST WARNING ISSUED
☆29/00Z
★20/12Z
SEOUL
TOKYO
SHANGHAI
TAIPEI
HONG KONG
NAHA
CHICHI JIMA
IWO JIMA
MARCUS
WAKE
SAIPAN
GUAM
ULITHI
YAP
PALAU IS
WOLEAI
TRUK
PONAPE
KOSRAE
ENEWETAK
KWAJALEIN
TCFA
17C
ABEH
110°
115°
120°
125°
130°
135°
140°
145°
150°
155°
160°
165°
30°
25°
20°
15°
10°
5°

SUPER TYPHOON FORREST (11W)

Forrest was the most intense of all of the tropical cyclones of 1983. After taking a long time to reach tropical storm intensity, it intensified from a tropical storm to a super typhoon in 30 hours and reached a maximum intensity of 150 kt (77 m/s) (Figure 3-11-1).

Forrest developed from a tropical disturbance which originated in a broad area of convective activity located 300 nm (556 km) to the east of Ponape (WMO 91348). This disturbance was first discussed in the Significant Tropical Weather Advisory (ABEH PGTW) on the 17th of September. At this time, the disturbance had a great deal of associated convection but was not well organized. However, a reconnaissance aircraft was dispatched to the area when 24 hour pressure drops of 3 mb at nearby stations were recorded. The aircraft mission confirmed the lack of organization in the system and was not able to close off a circulation. This mission was the first of four aircraft reconnaissance flights into Forrest during the period 17-20 September. All four were unable to close off a surface circulation. However, the fourth aircraft did succeed in closing off a circulation at the 700 mb level, thereby lending credence to the theory that Forrest originated from a mid-level circulation which developed downward.

Even though aircraft reconnaissance indicated the lack of a surface circulation, a TCFA was issued for the disturbance at 181801Z when the convection associated with it began to intensify and expand. The alert was reissued 24 hours later, after the second aircraft reconnaissance mission failed to close off a surface circulation.

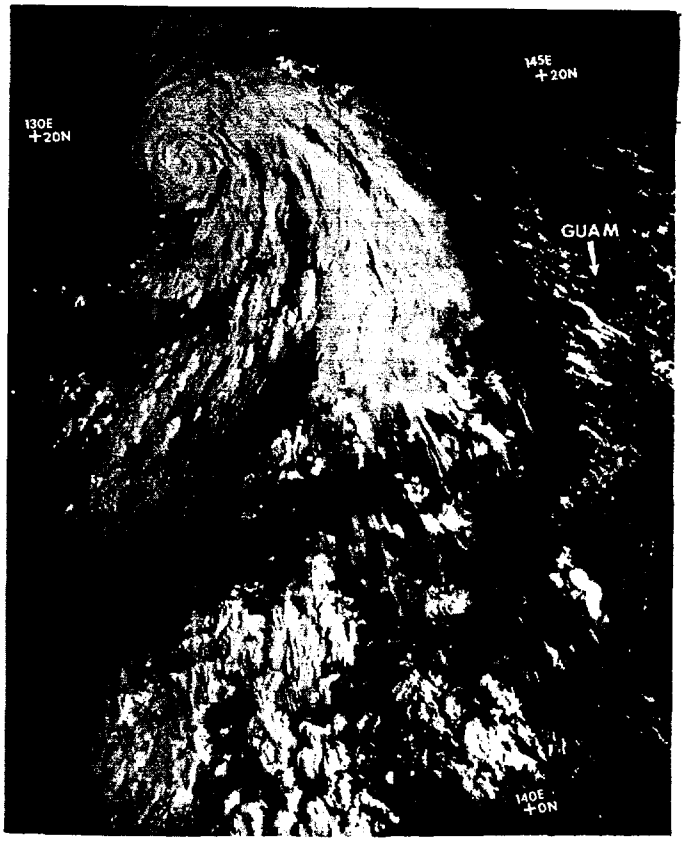

Figure 3-11-1. Super Typhoon Forrest at maximum intensity with 150 kt (77 m/s) winds and MSLP of 883 mb (222223Z NOAA 8 visual imagery).

The third and fourth aircraft reconnaissance missions were flown on the morning and afternoon of 20 September. Although both flights confirmed the absence of a surface circulation during the day, the first warning was issued later that evening when satellite imagery indicated the formation of a central dense overcast and good outflow to all quadrants. At this time, Forrest was located about 180 nm (330 km) south of Guam. The forecast called for continued gradual intensification and slow northwestward movement. Although this forecast track verified well, the intensity projections were far short of the mark. Reconnaissance aircraft flying a mission on the following morning encountered 50 to 60 kt (21-26 m/s) winds in Forrest's well-defined circulation. Continued intensification after this occurred rapidly. Forrest was upgraded to a typhoon at 211800Z when satellite imagery indicated a developing eye. Aircraft dropsonde data at 212340Z indicated that Forrest's central pressure had dropped to 975 mb. About 11 hours later, at 221057Z, a sea-level pressure of 883 mb was recorded. This represented a drop of 92 mb in a little under 24 hours. This is graphically displayed in a plot of Forrest's central sea-level pressure over time (Figure 3-11-2). Note the rapid drop in pressure on the 22nd.

Fortunately, Forrest's rapid intensification occurred after the system had moved well clear of Guam. Even though Forrest was relatively weak when it passed Guam, the island was subjected to winds gusting in excess of 30 kt (15 m/s) and heavy rains. About 2 inches (5 cm) of badly needed rain fell, causing minor flooding but no serious damage.

As Forrest moved northwestward and intensified, it became apparent that a recurvature scenario was developing. A break in the subtropical ridge between Taiwan and Okinawa was clearly and consistently indicated in the NOGAPS numerical prognoses. Forrest was therefore forecast to continue moving northwestward and recurve in the vicinity of this weakness. This forecast verified well except for the precise time and location of the point of recurvature. Forrest continued moving northwestward longer than expected.

Prior to recurvature, Forrest passed 107 nm (198 km) southwest of Okinawa, subjecting the island to high winds and heavy rain. Maximum sustained winds recorded at Kadena Air Base were 50 kt (26 m/s) with gusts to 74 kt (38 m/s). Rainfall totalling 11.65 inches (30 cm) resulted in flooding which caused minor damage to the installation. Other damages due to high winds were limited to minor personnel injuries and the loss of some antennas. Preliminary reports from Japanese authorities indicated that the civilian population of Okinawa weathered the storm equally well.

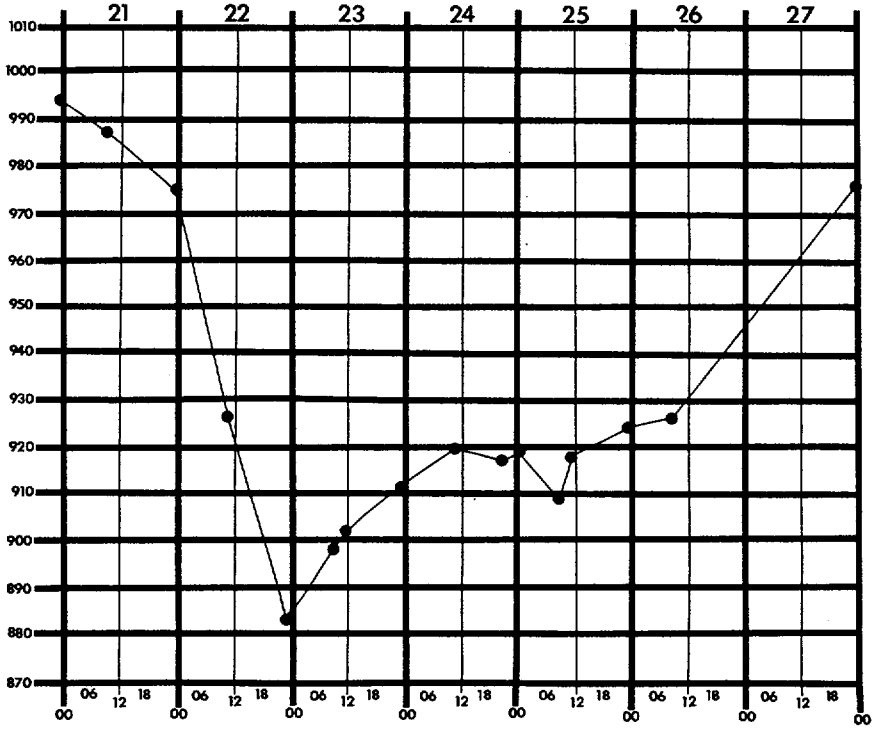

Figure 3-11-2. Intensity trends for Forrest as indicated by a plot of MSLP versus time.

Residents of Inza Island, northwest of Okinawa, were not so fortunate. A tornado, spawned during the passage of Forrest, cleared a swath 300 ft (91 m) wide across the island, destroying seven homes and injuring 26 people, some seriously. There were also reports of tornadoes over Okinawa, however, none of these touched down.

While moving past Okinawa, Forrest began to interact with a frontal system moving off the Asian continent. Within 48 hours of the onset of this interaction, satellite imagery indicated that Forrest had lost its deep convection and had begun to take on extratropical characteristics. Shortly thereafter, Forrest recurved to the east-northeast and accelerated rapidly.

Forrest weakened dramatically while undergoing extratropical transition. This was fortunate since its track during this period carried it into heavily populated areas of southern Japan at speeds up to 40 kt (74 km/hr). While crossing the island of Kyushu, Forrest passed approximately 25 nm (45 km) south of Sasebo. Inport at Sasebo were five U.S. Navy ships and several ships of the Japanese Maritime Self Defense Force. This harbor had previously been evaluated as a safe typhoon haven due to the sheltering effects of the topography in the area. This evaluation was proven correct when none of the ships in the harbor suffered damages during the passage of Forrest. Other areas in southern Japan suffered extensively from high winds and heavy rains. Initial reports indicated 21 dead, 86 injured and 17 missing. Heavy rains, up to 19 inches (48 cm) in some areas, caused numerous landslides and widespread flooding resulting in damages to 46,000 homes, some of which were total losses. The storm also stranded 28,000 travelers due to the disruption of domestic flights and rail service.

Forrest completed extratropical transition on the 28th at 0600Z while located near the southern tip of Shikoku. From this point on, Forrest continued to weaken and move rapidly toward the east-northeast as an extratropical system. Forrest was continued in warning status for an additional 18 hours until 190000Z when the final warning was issued. At this point, Forrest had cleared Japan and was moving eastward as an extratropical low with maximum sustained winds of 35 kt (18 m/s).